

The well-being of children in the face of socio-economic deprivation and family instability

Keywords

- Children's well-being
- Family poverty
- Family structure
- Family stability
- Cumulative effects

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Across rich countries almost one child in seven, on average, lives in relative income poverty, i.e. in a household with an equivalised disposable income lower than 60% of the median (OECD, 2018). There are considerable variations across countries. For example, in 2017, 4.1 million children in the UK (30% of all children) were living in relative low-income households, after consideration of housing costs. Already in 2007, the United Nations report on the well-being of children in rich countries (Unicef, 2007) suggested that children growing up in the UK were suffering greater deprivation than those in most other wealthy countries. At that time, the UK government had introduced a progressive agenda to reduce child poverty and improve life chances of low-income families, including direct investments in so-called Sure-Start Children Centres providing subsidised childcare, early education, health and family support services (Hills and Steward, 2005). However, in the aftermath of the 2008 Great Recession, most families were affected by major cuts to the UK welfare budget, closures of many Sure Start Centres, and benefit freezes resulting from the austerity programme introduced in 2010. Given the persistence of extreme poverty even in highly developed societies, and continuing austerity measures in the UK context, it is essential that we learn more about the impact of socio-economic adversity on children's development and identify factors that enable families to promote successful development and well-being of their children in the early years.

Current consensus (and government policy for that matter) emphasises the importance of early cognitive and socio-emotional development, which is considered to be critical for subsequent development. The focus of this study is thus on the early preschool years, examining the effect of family deprivation and associated risk factors such as family instability on children's well-being in early life, and the role of parenting practices in moderating this risk. The aim is to gain a better understanding of the multiple challenges that families of young children face and what parents can do to support the well-being of their children. Early childhood is a period of high dependency

and intense care-giving, and parents play a crucial role in meeting their children's need for food, sleep and emotional attachment (Bornstein and Bradley, 2003). It is thus important to gain a better understanding of the role of parents in providing structure and routine in daily life, i.e. practices that are considered to be readily malleable, and to assess the extent to which these practices are effective in supporting children's well-being even in the face of adversity.

Risk and resilience

Theoretically, the study is guided by a developmental-contextual framework for the study of resilience, considering multiple levels of influence (Bronfenbrenner, 1979), variation in response to adversity, and interactions between deprivation and parenting practices in shaping the well-being of children (Schoon, 2006 and 2012). Not all children and their families are similarly affected by the experience of family deprivation. Some show resilience in the face of adversity, i.e. they seem able to 'beat the odds' and function effectively, despite the experience of adversity (Masten, 2014; Rutter, 2006; Schoon, 2012). The manifestation of resilience is not a personality characteristic. It is a relational construct, resulting from the process of withstanding the negative effects of adversity. It is associated with multiple factors, including characteristics of children, their parents, and the wider social context. For example, it has been argued that some children are more or less susceptible than others to both positive and negative contextual influences pertaining to their biology, temperament, or some other organismic reason, such as prematurity (Belsky and Pluess, 2009). In addition to individual characteristics, features in individuals' social context, in particular parenting behaviours, have shown to be supportive in the face of adversity (Chase-Lansdale and Pittman, 2002; Masten, 2018).

It is argued that for a more comprehensive understanding of the impact of family adversity on children's development and well-being it is necessary to adopt a multi-dimensional operationalisation of both adversity and well-being. The

approach is informed by previous studies using multi-dimensional indicators to measure family deprivation, including indicators of material deprivation and social isolation (Nolan and Whelan, 1996; Tomlinson et al., 2008; Townsend, 1979). Children's well-being is conceptualised to embrace cognitive, social and emotional adjustment by age 5, as these domains have been identified as crucial indicators of developmental health or well-being (Hertzman, 1999). The study adds to the literature by a) adopting a multi-dimensional and dynamic approach in conceptualising family adversity to include indicators of both socio-economic disadvantage and family (in)stability; b) by examining the impact of risk exposure across different dimensions of child well-being; and c) by assessing the potential moderating role of parenting practices in a national representative sample of young children aged 0 to 5 years.

In the following, the multiple dimensions of family adversity and variations in response to this adversity are described in more detail, as are the multiple dimensions of effective functioning, and the potential compensatory role of parenting practices. The research questions, methodology and results are then specified before a discussion and evaluation of the findings.

Multiple dimensions of family adversity

Consistent evidence shows that harm to the physical and mental health and well-being of children can be caused by family poverty and associated adverse living conditions (Bradley and Corwyn, 2002; Bradshaw and Mayhew, 2005; Schoon et al., 2012; Yoshikawa et al., 2012). The effects of family adversity on child development appear to be strongest during the pre-school and early school years (Brooks-Gunn and Duncan, 1997; Schoon, 2006). Indeed, the early years have been identified as a critical window of opportunity for interventions aiming to build children's competences and support their cognitive and socio-emotional development (Gross, 2008; Heckman, 2006; Sylva et al., 2010). In order to design effective interventions, however, it is necessary to comprehensively conceptualise the adverse conditions families face, taking into account multiple dimensions of risk, the cumulation of risk factors, and the dynamics of risk effects.

Experts increasingly question the validity and reliability of using income as the sole indicator to measure family adversity, arguing for a multi-dimensional approach instead (Bradshaw and Mayhew, 2011; Dhongde and Haveman, 2017). Poverty is increasingly concentrated in certain

subgroups of the population and in certain areas. As such, the impact of family poverty on child outcomes might be spurious, due to its association with a number of other problem factors, including family socio-demographic characteristics (such as parental education, employment status, number of children in the family, age of the mother), family structure and stability, parental mental health, housing conditions, and area deprivation (Bradshaw and Holmes, 2010).

Cumulation of risk

It is generally not one single risk factor, but a cumulation of risks that undermine individual adjustment (Schoon, 2012; Rutter, 2006). The relationship between any single risk factor and subsequent outcomes tends to be weak, and usually many risks are involved in determining an outcome. Serious risk emanates from the accumulation of risk factors. Focusing on one risk factor only (such as family income) would imply an overestimation of the effect of that factor and an underestimation of the cumulative effect of family deprivation. It is therefore important to consider the effect of other potential risk factors when modelling the relationship between family poverty and children's outcomes. These factors may act independently of each other but are also likely to interact, so that disaggregating their effect on children's well-being is extremely challenging. A more specific and detailed understanding of underlying risk processes is however crucial, especially when considering the effectiveness of interventions.

Poverty affects families economically and socially, as well as on an emotional level. Economic hardship has been associated with increased parental distress and discord, as well as reduced capacity for parenting and greater risk of relationship break-up (Conger et al., 2010). Family structure instability is increasingly recognised to be negatively associated with children's well-being (Berger et al., 2018; Lee and McLanahan, 2015; Waldfogel et al., 2010). Understanding is however less developed regarding the relative and combined influence of socio-economic hardship and family instability on children's development. Most previous studies focused on the role of family economic hardship in shaping family interactions and the associated impact on developmental outcomes in young children (Linver et al., 2002; Robila and Krishnakumar, 2006; Schoon et al., 2010). Informed by assumptions formulated within resource deprivation (or investment) models (Bradley and Corwyn, 2002; McLanahan, 2009) and family stress models (Conger et al., 2010), they describe key mechanisms linking socio-economic family deprivation via parenting

processes to children's adjustment. These comprise the ability to pay for learning materials or toys (investments), or to maintain supportive and caring relationships with the partner and children. However, understanding is still weak regarding the relative influence of family structure and instability on the developmental health of young children in addition and above other potential family deprivation indicators (such as socio-economic factors). This study thus includes indicators of socio-economic adversity as well as family structure and instability, assessing their independent and combined effect.

Dynamics of risk effects

In addition, the study takes into account that risk exposure can change over time. For example, demographic shifts in patterns of family formation and living arrangements since the 1970s have resulted in increased rates of non-marital births and cohabitation, and high divorce rates (Amato, 2005; McLanahan, 2009; OECD, 2011). At the family level, changes in family structure, also termed as 'family instability', have been identified as a threat to children's psychological and social functioning (Fomby and Cherlin, 2007). Historically, research in this area has focused on the association between child well-being and family structure as a state (i.e. marriage, cohabitation, divorce, etc.). Less is known about the correlates and consequences of transitions in family types, especially among non-married parents (Collishaw et al., 2007; Osborne and McLanahan, 2007). Likewise, most previous studies focusing on the effect of family poverty on children's well-being have looked at poverty as a state, without considering that households may move in and out of poverty over time. The analysis therefore differentiates between families that never experienced income poverty during the period of observation, those that moved in and out of poverty, and those that were persistently poor over multiple years of observation.

Effective functioning in the face of family adversity

Not all children and their families respond to the experience of adversity in the same way. Some show resilience in the face of adversity, i.e. they do better than expected when confronted with major assaults on the developmental process (Masten, 2014; Schoon, 2012). Resilience is understood as a two-dimensional construct, defined by the constellations of risk exposure and the manifestation of effective functioning in the face of that risk. It is generally not directly measured, and its identification is based on two elements that must co-occur for resilience to be

manifest: the existence of a significant risk factor that has the potential to undermine children's development, and the manifestation of relatively good developmental functioning despite this risk (Luthar et al., 2000; Masten, 2014). Effective functioning has been defined in several ways, ranging from the absence of psychopathology to the mastery of developmental tasks encountered at different life stages (Masten, 2018). Here effective functioning is conceptualised as normative functions within or above the expected average for a normative cohort. The focus is not on extraordinary achievements – but 'ordinary magic' (Masten, 2014), normal cognitive, socio-emotional functioning in the face of adversity, indicating children's resilience and well-being.

Before inferring resilience, two methodologically artefactual possibilities must be considered. First, positive adjustment might simply be a function of variations in risk exposure, e.g. its severity or duration. Second, apparent resilience might be a consequence of measuring too narrow a range of outcomes. For example, it is possible that a child growing up in poverty achieves good academic performance but at the same time develops emotional or social adjustment problems (Masten, 2018; Schoon, 2006). It is thus important to assess whether the individual has been exposed to serious adversity and ensure that the outcome covers a range of outcomes studied (Rutter, 2006; Schoon, 2012).

Multiple dimensions of adjustment

In assessing positive adjustment, we must take into account that it is possible for a child to be competent in one domain but not another, and mastery of a particular domain cannot be assumed to generalise to other domains (Schoon, 2012). Thus, it is important to consider multiple domains of adjustment to gain a more in-depth understanding of the role of specific risks and specific domains of adjustment. Unless multiple domains of adjustment are assessed, only a partial picture of adaptation can be formulated. In this study both the cognitive adjustment and socio-emotional adjustment of children exposed to childhood poverty are assessed. Children's cognitive adjustment is reflected in direct measures of cognitive ability. Regarding socio-emotional adjustment, a differentiation is made between *externalising problems* such as conduct problems (i.e. children directing emotional responses away from themselves – via aggression and anti-social behaviour such as deception, rule-breaking, bullying, etc.) and *internalising problems* such as anxiety and depression where children channel emotional responses internally

(Achenbach et al., 2016). Overall, boys more commonly direct emotion externally, whilst girls are more likely to internalise emotion.

Furthermore, the identification of resilience has to take into account the seriousness of the risk exposure and not only the level of functioning, as there might be a dose-response gradient (Rutter, 2006; Schoon, 2006 and 2012). Not all risk exposure is necessarily harmful. According to the challenge model of resilience, low or moderate levels of risk exposure may have beneficial or steeling effects, providing a chance to practise problem-solving skills and mobilise resources. Severe levels of risk can however overpower the coping abilities of the individual (Schoon et al., 2012).

In addition, evidence suggests that family adversity has differential effects on specific child outcomes, with poverty generally exhibiting stronger associations with cognitive development (Schoon et al., 2010), and family disruption being more strongly associated with socio-emotional adjustment. As a result, we need to know more about the domain-specific effects of deprivation indicators. Our lack of understanding of *how* the experience of hardship and family instability influences child development across domains has greatly hampered the ability of policy makers to design effective interventions to improve child well-being. These are the issues this study is designed to address. Moreover, the potential moderating role of different parenting practices is examined.

The potential compensatory role of parenting practices

Families are considered to be key in providing supportive, nurturing and stimulating environments for their children (Bradley and Corwyn, 2002; Conger et al., 2010; McLanahan, 2009). Consistent and predictable family routines and warm and responsive parenting are associated with positive child outcomes, including cognitive development and self-regulation (Fiese, 2006; Landry et al., 2001), and lower levels of internalising and externalising behaviour problems (McLoyd et al., 2008). Family routines provide stability and structure for children's lives and include regular mealtimes, bedtimes, and other repeated family activities. By creating a secure and warm relationship parents can respond adequately to their child's need for trust and affection. Previous research on caregiving practices tended to focus on specific aspects, such as feeding (Quigley et al., 2012), sleeping (Kelly et al., 2013), or warm and supportive parent-child interactions

rather than examining practices across these aspects. Here we examine the role of multiple indicators of parenting practice that shape the adjustment of children exposed to family adversity and instability. Moreover, it is asked if effective parenting can compensate for the experience of socio-economic deprivation in early childhood?

The study takes into account that economic resources, including poverty, socioeconomic status, parental education and employment, are powerful predictors of parenting behaviours. Parents exposed to socio-economic adversity may experience an overload in their daily tasks, and not be able to interact effectively with their children or to follow regular bedtime or feeding routines. For example, family poverty and economic deprivation may increase parental stress, resulting in less effective parenting (Conger et al., 2010). Furthermore, children growing up in poor families are less likely to be breastfed (Montgomery et al., 2006) and have less access to cognitively stimulating activities than children from non-poor families (Yeung et al., 2002). In addition, family structure, including presence of spouses, cohabiting partners, and other adult family members, has been associated with effective parenting behaviours (Waylen and Stewart-Brown, 2010), while single parents generally have fewer resources and increased exposure to stressors, such as economic instability, undermining their capability for effective parenting (Chase-Lansdale and Pittman, 2002). Yet, most parents want the best for their children, and the question is, which parenting practices can potentially reduce the negative effect of family adversity, or are effective even in conditions of severe adversity?

The analysis differentiates between general promotive and distinct protective effects (Gutman et al., 2002). While general promotive factors have a beneficial effect in both high and low risk conditions, distinct protective factors show a stronger protective effect in high risk conditions, i.e. there is an interactive relationship between the protective factor, the risk exposure, and the outcome (Rutter, 2006; Schoon, 2006).

Research questions

Using data collected for a nationally representative, longitudinal cohort study of young children, the UK Millennium Cohort, this paper asks:

- what are the relative, independent and combined effects of family deprivation and instability on children's well-being? Based on the assumption

of cumulative risk, it is expected that both factors impact on child's well-being, although their impact on child well-being might be modified when taking into account associated socio-demographic risks, such as parental education, social class and employment status, age of the mother, parental mental health, housing conditions, and area deprivation?;

- do the effects vary for different domains of children's adjustment? Based on the assumption of domain-specific risk effects it is expected that there are different risk processes, with socio-economic risk asserting a stronger effect on cognitive adjustment, while family instability is more strongly associated with emotional and behaviour adjustment;
- to what extent can effective parenting practices compensate the impact of family adversity on children's well-being? Following the assumption of a dose-effect it is expected that at low or medium levels of risk potential, effective parenting can be maintained, while severe levels of risk can overpower the coping abilities of families.

The analysis controls for several child characteristics which have shown to be associated with cognitive and behavioural adjustment, after controlling for socio-demographic risk factors (Murray et al., 2007; Schoon et al., 2010). These include indicators for gender, ethnic minority status, and birthweight, as well as early developmental milestones and an easy temperament.

Presentation of the data

The study draws on data collected for the UK Millennium Cohort Study (MCS). MCS is a nationally representative, multi-purpose, longitudinal study following the lives of over 18,000 children born in all four countries of the UK between September 2000 and January 2002 (Joshi and Fitzsimons, 2016). The children were recruited from the Child Benefit Register in a complex clustered and disproportionately stratified design (Plewis et al., 2004). Data were collected in 6 waves at ages 9 months, and 3, 5, 7, 11 and 14 years, and are available to researchers through the UK Data Archive.

At each wave, information was obtained via personal interviews and a self-completion questionnaire, covering information on the child's health and development; family structure and demographics; parental education, employment, health, psychological well-being; parenting

styles and family relationships. This paper focuses on preschool children, using assessments made at ages 9 months, 3 and 5 years (waves 1-3). The main informants were overwhelmingly the natural mothers (99% at MCS1, 96% by MCS5). When possible, partners of the main respondent in two-parent families were also interviewed. For 12,395 cases we have complete data regarding poverty and family status at waves 1-3 (all valid cases). The analytic longitudinal sample comprises 9,882 children with complete data regarding family poverty and family status at age 9 months, 3 and 5 years, all control variables, and cognitive and behavioural outcomes at age 5.

The MCS survey team has developed attrition weights to correct for biases due to non-response, alongside the sample weights, which take into account the complex sample design (Hansen, 2014).

Variables of interest

Child well-being is indicated through cognitive, socio-emotional and behavioural adjustment at age 5 years :

- *Children's cognitive development* was assessed directly at age 5 years. Each study child was individually assessed using the British Ability Scales (Bas), a reliable measure of cognitive functioning with good external validity (Hill, 2005). Three subscales were used for the assessment: naming vocabulary, picture similarities and pattern construction, and capturing core aspects of verbal and nonverbal skills using age-adjusted standard scores. An overall score for general cognitive ability was created using principal component analysis, transformed into a standardised score with a mean of 0 and a standard deviation of 1.
- Social and emotional adjustment was measured using a parent-reported Strengths and Difficulties Questionnaire (SDQ). The SDQ is a well-validated questionnaire with scales assessing conduct problems, hyperactivity, emotional adjustment, and peer problems. In line with recommended practice for community samples (Goodman et al., 2010), we generated a scale indicating *internalising problems*, comprising all 10 items from the emotional and peer problems subscales, and an *externalising problem* scale, comprising all 10 items from the hyperactivity and conduct problems subscales. Scores on each of the scales were standardised to a mean

of 0 and a standard deviation of 1. A high score indicates high levels of problems.

Family Adversity comprises indicators of poverty, family structure and transitions, as well as associated socio-demographic risk factors, and a summary multiple-risk index.

- *Family poverty* was identified if the equivalised household income fell below the poverty line, i.e. 60% of the equivalised median net household income. A dummy variable was created to identify families in poverty at age 9 months, 3 and 5 years. A dummy variable was created to identify families in poverty at age 9 months, 3 and 5 years, and to indicate the number of sweeps when the family was in poverty, ranging from 0 to 3.
- *Family structure and transitions* were assessed using mothers' reports of their relationship status. A categorical variable was created indicating the mother's marital status at the birth of the child, differentiating between married, cohabiting and single mothers. An additional variable was created that indicated changes to parents' relationship status. If relationship status at two consecutive sweeps was different, this was considered a change. The relationship change variable is the number of times relationship status changed between sweeps, with possible values of 0 to 2.
- *Associated socio-demographic risks: Teen parenthood* was recorded for those who became a parent before age 20. *Low parental education* is identified if neither the mother nor father had any formal qualifications from school or college (1 = no qualifications; otherwise it is set to 0). *Low social class* differentiates between parents in partly skilled and unskilled occupations (categories IV and V of the Registrar General's measure of social class, RGSC), versus others (categories IIIM - Skilled manual -, IIINM - Skilled non-manual -, II - Managerial and Technical -, and I - Professional - of the RGSC). *Parental worklessness* comprises households with no employed parent (1 = worklessness; 0 = at least one parent employed). *Housing tenure* identifies families currently renting from local authorities or housing associations (1 = living in social housing; 0 = living in their own home (either as outright homeowners or mortgagees)). *Overcrowding* was measured by the

ratio of person per room (excluding kitchen and bathroom) and code as 1 = more than one person per room; 0 = no overcrowding. *Area deprivation* was measured with the Index of multiple deprivation (IMD) which gives a measure of relative levels of deprivation in small areas across indicators of income and employment, health, education, crime, access to services and living environment in an area. As there is no unified definition for these measures across the UK, and they are held as country-specific variables, they can be broadly compared using the within-country quintiles. The bottom quintile identifies families living in the most deprived areas.

- *Summary Multiple Risk Index (MRI)*. Each indicator of family adversity described above was dichotomised so that a 0 indicates absence of the risk factor and 1 indicates its presence. The number of risk factors present was then summed to an index ranging from 0 to 10, comprising exposure to poverty at 3-time points, single parent at birth, 2+ family transitions, teenage parenthood, no educational qualifications, low social status, workless household, rented housing, overcrowding, and area deprivation (bottom quintile).

Parenting practices comprise a range of indicators, including: *Breastfeeding*, which was identified from two questions asking mothers whether the child had ever been breastfed, and if yes, whether for more than one day (yes or no). *Quality of the parent-child relationship* was assessed at age 3 years using the Pianta scale (Pianta, 1992), a 15-item self-administered rating scale with responses on a 5-point Likert scale. A total score was derived, with a high score reflecting an overall positive relationship. *Cognitive stimulation* at age 3 years was measured on the basis of maternal report on whether the child was read to at least once a week. *Regularity of routines*: two items assessing whether the child had regular bed and meal times.

Controls variables included an indicator of maternal mental health and child characteristics, all measured at wave 1. *Maternal mental health* was assessed with 9 items of the malaise inventory (Rutter et al., 1970). Individuals responding 'yes' to four or more of the 9 dichotomous items are considered to be at risk of depression. *Child characteristics*. Indicators of early child characteristics in the first year of life include gender, ethnic minority status, birthweight, as well as the attainment of gross and

fine motor developmental milestones and early child temperament measured with the Carey Infant Temperament Scale (Carey & McDevitt, 1995).

Main results

Table 1 shows the descriptive statistics of the indicators of family deprivation and control variables, and their bi-variate association with cognitive, behavioural and emotional adjustment of the child. Each of the risk variables is significantly associated with the 3 child outcomes. Per-

sistent poverty, family structure, the number of family transitions and other socio-demographic risks show a negative association with cognitive adjustment, suggesting that high levels of risk are associated with lower levels of cognitive adjustment. Associations between the risk factors and externalising and internalising behaviour are positive, suggesting that high levels of risk are associated with increased levels of behaviour problems. Moreover, there is a significant association between cognitive, social and emotional adjustment and the number of risks en-

Table 1 – Descriptive and bi-variate associations between risk factors and children’s cognitive, social and emotional well-being

	All valid cases (n=12 395)	Analytic sample (n=9 882)	Cognitive adjustment	Externalising behaviour	Internalising behaviour
	%	%	B (SE)	B (SE)	B (SE)
Persistent poverty (ref: none)		62,8			
Once	14,4	14,3	-0,26* (0,03)	0,24* (0,03)	0,17* (0,03)
Twice	11,0	10,0	-0,51* (0,04)	0,40* (0,03)	0,39* (0,01)
Thrice	16,3	12,9	-0,75* (0,04)	0,59* (0,03)	0,55* (0,03)
Family structure (ref: married)		62,2			
Cohabiting	24,7	24,9	-0,17* (0,03)	0,31* (0,03)	0,13* (0,03)
Single	14,5	12,8	-0,44* (0,03)	0,56* (0,03)	0,41* (0,03)
Family transitions (ref: none)		77,0			
1	18,6	18,3	-0,15* (0,02)	0,27* (0,03)	13* (0,03)
2	4,81	4,6	-0,21* (0,04)	0,36* (0,05)	0,20* (0,05)
Other socio-demographic risks					
Teen mother	4,4	4,3	-0,44* (0,05)	0,48* (0,05)	0,39* (0,06)
Low Parental education	11,6	8,7	-0,68* (0,04)	-0,56* (0,04)	0,48* (0,04)
Low parental social class	21,4	19,1	-0,48* (0,03)	0,44* (0,03)	0,35* (0,03)
No parent working	15,9	13,7	-0,55* (0,03)	0,52* (0,09)	0,46* (0,03)
No housing tenure	35,8	32,3	-0,46* (0,02)	0,47* (0,02)	0,39* (0,02)
Crowding (1+ person per room)	8,4	6,2	-0,55* (0,04)	0,19* (0,04)	0,27* (0,04)
Area disadvantage	21,2	17,9	-0,48* (0,04)	0,36* (0,03)	0,38* (0,03)
Multiple risk index (ref: none)					
1	18,0	18,1	-0,26* (0,03)	0,21* (0,03)	0,13* (0,03)
2	10,2	9,7	-0,41* (0,04)	0,39* (0,03)	0,31* (0,03)
3	7,3	7,1	-0,50* (0,04)	0,44* (0,05)	0,33* (0,04)
4	6,2	5,6	-0,65* (0,05)	0,55* (0,03)	0,47* (0,05)
5 +	11,6	10,41	-0,86* (0,04)	0,48* (0,04)	0,67* (0,04)
Maternal depression (wave 1)	23,4	22,6	-0,15* (0,02)	0,44* (0,03)	0,42* (0,03)
Child characteristics (wave 1)					
Gender (Female)	49,2	49,2	0,14* (0,02)	-0,28* (0,02)	-0,03 (0,02)
Birthweight <2,5kg	7,2	6,0	-0,29* (0,04)	0,21* (0,04)	0,19* (0,04)
Ethnic minority status	11,7	7,6	-0,48* (0,05)	0,11* (0,04)	0,35* (0,05)
Difficult early temperament	20,2	18,8	-0,14* (0,04)	0,21* (0,03)	0,34* (0,02)
Developmental delays	8,1	8,7	-0,25* (0,04)	0,20* (0,05)	0,22* (0,04)

Source: UK Millennium Cohort Study (2001-2006).

Scope: Children aged 9 months to 5 years (n=9882).

* p<0,001; † p<0,01; ‡ p<0,05; B: unstandardized regression coefficient; (SE): standard error.

Interpretation: 8,7% of British children have developmental delays.

countered, maternal depression and indicators of child characteristics.

Before conducting the multivariate analysis, the multi-collinearity of the risk indicators variables was assessed. Bi-variate correlations between the indicators of poverty, family structure and instability and the other socio-demographic risks were less than 0,58, and the variance inflation tolerance values were lower than 0.5, suggesting that multi-collinearity is not an issue.

Table 2 shows the co-joint associations between poverty, family instability and other socio-demographic risk factors and cognitive adjustment at age 5, controlling for child characteristics and maternal depression. To test the relative and independent influence of different indicators, a stepwise approach was chosen. First, only indicators of poverty exposure were used (model 1); second, only indicators of family structure and stability (model 2); third, indicators of both poverty and family structure/instability model 3), and fourth, indicators of poverty, family

structure/instability, and additional socio-demographic risks (model 4). A negative association indicates reduced levels of adjustment. The findings suggest that repeated and persistent poverty has a significant association with general cognitive ability at age 5 (model 1), as do family structure and transitions (model 2). Indeed, both poverty and family structure show independent associations with general cognitive ability, while the effect of family instability on cognitive ability can be explained through indicators of family poverty (model 3). Taking into account the role of additional socio-demographic risk factors (model 4) reduces the association between poverty and cognitive ability by about 50%, and explains the impact of cohabitation, while single parenthood remains significantly associated with cognitive ability in this multivariate model.

Model 4 furthermore suggests independent risk effects of the other risk factors (except for teen parenthood and parental worklessness), as they are significantly associated with general cognitive ability in addition to and above the effect of poverty and family structure.

Table 2 – Predicting children’s general cognitive adjustment by poverty, family instability and family demographics

	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)
Poverty exposure (ref: none)				
Once	-0,21* (0,03)		-0,18* (0,03)	-0,11* (0,03)
Twice	-0,46* (0,04)		-0,41* (0,04)	-0,25* (0,05)
Thrice	-0,54* (0,04)		-0,47* (0,04)	-0,22* (0,05)
Family status at birth (ref: married)				
Single		-0,18* (0,03)	-0,11* (0,03)	-0,07 [‡] (0,03)
Cohabit		-0,37* (0,04)	-0,11 [‡] (0,04)	0,03 (0,04)
Family transitions (ref: none)				
1		-0,07 [‡] (0,03)	-0,02 (0,03)	0,02 (0,03)
2 +		-0,17* (0,05)	-0,09 (0,05)	-0,07 (0,04)
Other risks				
Teen mother (W1)				-0,12 (0,07)
Parents low education (W1)				-0,21* (0,05)
Low social class (W1)				-0,15* (0,03)
No parent is in work (W1)				-0,08 (0,05)
No housing tenure (W1)				-0,07 [‡] (0,03)
Overcrowding (W1)				-0,20* (0,04)
Area deprivation (W1)				-0,10 [‡] (0,04)
R²	0,12	0,10	0,13	0,14

Source: UK Millennium Cohort Study (2001-2006).

Scope: Children aged 9 months to 5 years (n=9 882).

* p<0,001; [‡] p<0,01; [§] p<0,05; B: unstandardized regression coefficient; (SE): standard error.

Interpretation: experiencing poverty three times between ages 9 months and 5 years reduces levels of cognitive attainment by 0,54 points.

Table 3 – Predicting children’s externalising behaviour by poverty, family instability and family demographics

	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)
Poverty exposure (ref: none)				
Once		0,18* (0,03)		0,10* (0,03)
Twice		0,37* (0,04)		0,24* (0,04)
Thrice		0,42* (0,04)		0,25* (0,06)
Family status at birth (ref: married)				
Single		0,21* (0,03)	0,18* (0,03)	0,13* (0,03)
Cohabit		0,43* (0,04)	0,28* (0,04)	0,15* (0,04)
Family transitions (ref: none)				
1		0,09* (0,03)	0,07* (0,03)	0,06 (0,03)
2 +		0,26* (0,06)	0,21* (0,06)	0,20* (0,06)
Other risks				
Teen mother (W1)				0,01 (0,07)
Parents low education (W1)				0,19* (0,05)
Low social class (W1)				0,13* (0,03)
No parent is in work (W1)				0,03 (0,05)
No housing tenure (W1)				0,16* (0,03)
Overcrowding (W1)				0,03 (0,05)
Area deprivation (W1)				0,05 (0,05)
R²	0,11	0,11	0,12	0,13

Source: UK Millennium Cohort Study (2001-2006).

Scope: Children aged 9 months to 5 years (n=9 882).

* p<0,001; [‡] p<0,01; [§] p<0,05; B: unstandardized regression coefficient; (SE): standard error.

Interpretation: experiencing poverty three times between ages 9 months and 5 years increases levels of externalising problems by 0,42 points.

The same stepwise models were run to predict externalising problems (table 3). Here a positive association indicates an increased risk of adjustment problems. The findings suggest that repeated and persistent poverty is significantly associated with increased levels of externalising behaviour problems at age 5 (model 1). There is also a significant association between family structure and family instability and behavioural adjustment (model 2). Poverty, family structure and family instability all explain about the same amount of variation in the outcome. Model 3 suggests that poverty as well as family structure and instability are independently associated with increased externalising problems. Furthermore, model 3 suggests that the association between poverty and externalising behaviour can be partly explained through variations in family structure and instability, as indicated by the reduced association between poverty and externalising behaviour. The associations between poverty, family structure and instability, and externalising behaviour adjustment remain significant after adding the additional risk factors (model 4). Intermittent poverty appears to be a risk, as do family structure and

2+ family transitions. In addition, low parental education, low social class, and lack of housing tenure show independent risk effects over and above exposure to poverty, family structure and family instability.

Regarding internalising problems, it seems that the effect of poverty and family structure and instability is less strong (table 4), as indicated by the lower R². Again, the same modelling strategy was used as above, and a positive association indicates an increased likelihood of adjustment problems. Repeated and persistent poverty is significantly associated with increased levels of internalising problem behaviour at age 5 (model 1). There is also a significant association between internalising problems and family structure and 2+ family transitions (model 2). Both poverty and family structure and instability explain about the same amount of variation in the outcome. Yet, while poverty and family structure show independent associations with internalising behaviour, the effect of family instability can be fully explained by the other two variables (model 3). Moreover, the effect of being exposed to poverty only once can be explained when considering the influence of family structure. Taking into account the other socio-demographic risk factors (model 4) eliminates the risk of persistent poverty, while intermittent exposure to poverty remains a significant risk for internalising behaviour (maybe pointing to additional stress associated with uncertainty regarding a critical situation – in contrast to habituation effects). Moreover, the effect of family structure is no longer significant, suggesting that internalising behaviour is most strongly associated with intermittent poverty exposure, low parental education, low social class, lack of housing tenure and area deprivation. The findings thus point to the crucial role of socio-economic deprivation in shaping internalising problems.

In a next step, we assessed the potential role of parenting practices in compensating the effect of family deprivation and instability on children's adjustment. For this analysis, the multiple risk index (MRI) is used as a predictor variable of child outcomes. Regression models are used to test whether the effect of cumulative risk exposure reduces or disappears once the postulated protective factors are put into the model. First, the association between children's adjustment and the MRI is assessed (model 1). In a second step the indicators of parenting practices are added (model 2). If the risk effect reduces after entering the indicators for parenting practices, a general promotive effect is identified, i.e. an independent effect in addition to and above the role of multiple risk factors. If the risk effect disappears, it can be concluded

Table 4 – Predicting children's internalising behaviour by poverty, family instability and family demographics

	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)
Poverty exposure (ref: none)				
Once	0,07* (0,03)		0,04 (0,03)	0,01 (0,03)
Twice	0,27* (0,04)		0,21* (0,04)	0,12* (0,04)
Thrice	0,31* (0,04)		0,22* (0,04)	0,07 (0,05)
Family status at birth (ref: married)				
Single		0,10* (0,03)	0,07* (0,03)	0,04 (0,03)
Cohabit		0,29* (0,04)	0,16* (0,04)	0,05 (0,05)
Family transitions (ref: none)				
1		0,02 (0,03)	0,00 (0,03)	0,00 (0,03)
2 +		0,13* (0,05)	0,09 (0,06)	0,08 (0,05)
Other risks				
Teen mother (W1)				-0,05 (0,06)
Parents low education (W1)				0,10 [§] (0,05)
Low social class (W1)				0,08 [§] (0,03)
No parent is in work (W1)				0,07 (0,05)
No housing tenure (W1)				0,10* (0,03)
Overcrowding (W1)				-0,01 (0,06)
Area deprivation (W1)				0,08 [§] (0,03)
R ²	0,08	0,08	0,08	0,09

Source: UK Millennium Cohort Study (2001-2006).

Scope: Children aged 9 months to 5 years (n=9 882).

* p<0,001; * p<0,01; § p<0,05; B: unstandardized regression coefficient; (SE): standard error.

Interpretation: experiencing poverty three times between ages 9 months and 5 years increases levels of internalising problems by 0,31 points.

that parenting practices fully mediate the influence of family adversity on child outcomes (i.e. no compensatory effect). In a final step, interactions between the MRI and the different indicators of parenting practice are assessed to identify potential compensatory effects.

Table 5 shows a significant association between cognitive, behavioural and emotional adjustment and the number of risks encountered (model 1 for each outcome). The greater the number of risks encountered, the lower the level of cognitive attainment (negative association) and the higher the level of externalising and internalising behaviour problems (positive association). Model 2 shows that the different indicators of parenting practice reduce the negative effect of the multiple risk index, but they do not remove it. Moreover, they show independent beneficial effects. Regarding cognitive adjustment, the findings suggest that each additional risk factor decreases the likelihood of positive cognitive development (model 1). Furthermore, there are significant independent promotive effects from breast feeding, warm parent-child interactions, reading to the child, and regular bed times (model 2). All of these factors show a positive association with cognitive attainment, i.e. they enable positive developmental outcomes even in the face of multiple adversities. For externalising behaviour, the associations with the multiple risk index (model 1) suggest that the greater the number of risk factors encountered, the higher the risk of manifesting externalising

behaviour problems (positive association). Adding the indicators for parenting practice (model 2) reduces the risk effects. Moreover, all indicators of parenting practices considered here show a significant influence, suggesting that each of these indicators shows an independent promotive effect, reducing the risk of behaviour problems (negative association) in addition to and above the influence of the other variables included in the model. Likewise, the risk of internalising problems is reduced if the child experiences a warm parent-child relationship and regular meal and bed times. The impact of effective parenting appears to be particularly great regarding externalising behaviour, as indicated by the considerable reduction in risk effects and the relatively high R².

To assess whether any of the protective factors significantly interacts with the exposure to multiple risks, the same regression models as above were run, including the main effects of the MRI, as well an interaction term between the MRI and each of the dichotomised potential protective factors. Significant interaction effects were evident only for a warm parent-child relationship, which enabled positive adjustment across domains, in particular regarding externalizing behaviour (results not shown, and available upon request).

Children exposed to no or low levels of risk (0-1 risk factors) show higher levels of cognitive ability and lower

Table 5 – Predicting cognitive and behavioural adjustment at age 5 years: multivariate OLS regression model

	Cognitive adjustment		Externalising behaviour		Internalising behaviour	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Multiple Risk Index (ref:0)						
1	-0,24 (0,03)	-0,18* (0,03)	0,19* (0,03)	0,13* (0,03)	0,09* (0,03)	0,06* (0,03)
2	-0,36* (0,04)	-0,27* (0,04)	0,33* (0,04)	0,22* (0,03)	0,19* (0,03)	0,14* (0,03)
3	-0,43* (0,04)	-0,33* (0,04)	0,38* (0,05)	0,27* (0,04)	0,23* (0,04)	0,18* (0,04)
4	-0,58* (0,05)	-0,43* (0,05)	0,50* (0,06)	0,32* (0,05)	0,33* (0,06)	0,24* (0,06)
5 +	-0,73* (0,05)	-0,54* (0,05)	0,65* (0,04)	0,39* (0,06)	0,48* (0,04)	0,36* (0,04)
Child was breast fed		0,18* (0,05)		-0,07* (0,02)		-0,00 (0,02)
Warm parent-child interaction		0,01* (0,0)		-0,05* (0,00)		-0,03 (0,00)*
Reading to the child		0,09* (0,01)		-0,08* (0,01)		-0,01 (0,01)
Child had regular bed times		0,06* (0,01)		-0,03* (0,01)		-0,05* (0,01)
Child had regular meal times		0,00 (0,02)		-0,05* (0,02)		-0,06* (0,02)
Constant	-4,65* (0,29)	-5,73* (0,28)	2,35* (0,26)	5,57* (0,28)	1,93* (0,25)	3,75* (,27)
R ²	0,14	0,17	0,13	0,27	0,09	0,15

Source: UK Millennium Cohort Study (2001-2006).

Scope: Children aged 9 months to 5 years (n=9882).

* p<0,001; # p<0,01; \$ p<0,05; B: unstandardized regression coefficient; (SE): standard error.

Interpretation: experiencing 5+ risk factors reduces levels of cognitive adjustment by 0,73 points.

levels of behaviour problems than children exposed to high levels of risk (5+). However, children experiencing a warm and supportive parent-child relationship do better than children experiencing relatively low levels of warmth and support (split at 1 standard deviation below the mean), even at high levels of risk exposure.

Discussion and conclusion

The findings highlight the multiple influences shaping children's well-being. Family poverty, repeated exposure to poverty, as well as family structure and instability are all significant risk factors, undermining the cognitive and social-emotional development of children. Indeed, these risk factors show independent effects, i.e. they are significant even after controlling for additional and potentially co-occurring socio-demographic risk factors, such as low parental education and social status, rented housing, overcrowding and area deprivation, which in turn also show independent effects. The findings emphasise the importance of considering multiple indicators of family adversity. The more risk factors children are exposed to, the more difficult it becomes for them to function effectively and fully develop their potential. No single magic bullet exists. Usually, many risks are involved in determining an outcome, and it is the cumulation of risks that has the strongest impact. Interestingly, teen motherhood and parental worklessness showed no independent risk effects in the multivariate models, suggesting that their influence on early child adjustment can be fully explained by the other risk factors included in the model. The findings suggest that focusing on only one risk factor brings with it an overestimation of the effect of that risk, and an underestimation of others, as well as cumulative effects of family adversity across domains. Regarding the design of effective interventions, this implies a holistic and integrative approach, addressing multiple, co-occurring, socio-economic and psycho-social issues.

The findings furthermore suggest domain-specific risk effects that must be considered when planning or designing appropriate intervention programs. Children's cognitive functioning is most strongly associated with family poverty, and tendentially also with the fact of being born to a single parent. These effects are significant even after controlling for a range of other socio-economic risk factors, suggesting that investments in preschool education should be targeted in particular at (single) parent families living in poverty. Regarding externalising behaviour, marital family status as well as the experience of family instability matters over and above the influence of family poverty and associated

socio-demographic risk factors, as does exposure to intermittent poverty. The findings suggest that uncertainty and uncontrollability of a situation can potentially undermine effective functioning and adjustment, and that exposure to frequent family transitions might lead to increased aggression and conflict with parents (Fomby and Cherlin, 2007). For internalising problems, exposure to socio-economic risk as well as intermittent poverty seem to matter most. Regarding the design of effective interventions, these findings could imply the need to provide stable and reliable services, especially for the most vulnerable families. Moreover, equal access is important, since children as young as 5 might already be aware of potential discrimination and experience anxiety associated with not being able to afford things that other more affluent families can afford.

The analysis also highlights the limitations of parenting practices as potential compensatory factors. All of the different parenting practices considered here show a general promotive effect, i.e. they assert an independent beneficial influence on children's adjustment, over and above the exposure to multiple risks, in particular regarding externalising behaviour. In conditions of severe adversity, however, only warm parent-child interactions appear to have a crucial role in supporting positive adjustment across domains. The other practices are important too, although they are less effective in conditions of severe adversity. The findings confirm the assumption of a dose effect (Rutter, 2006), i.e. exposure to severe levels of socio-economic risk can overpower the ability of families to cope. It seems that severe adversity can undermine the effectiveness of parental efforts to provide stability and structure in their children's life, while the effectiveness of attachment to the child, as expressed in warm parent-child relationships, can be maintained.

In interpreting our findings and developing suggestions for policies some limitations of the approach must be considered. The research is based on a secondary analysis of existing data rather than randomised trials. This means that it is not possible to establish robust causal relationships. It is likely that other, unmeasured differences that have not been included in our models could play a role. Furthermore, the study is limited by the quality of the collected data. This affected the choice of potential protective factors, many of which are based on single item statements, except the measure of warm parent-child relationships. Moreover, as in all longitudinal studies, missing data were encountered, both due to survey loss

and incomplete responses. Response bias at the individual level tends to underestimate the magnitude of the effects of social disadvantage, as sample attrition is greatest among cohort members in more deprived circumstances. Thus, the results might provide a more conservative estimate of social inequalities in the sample.

Despite these concerns, the study contributes to a better understanding of how experiences of family adversity affect children's outcomes across domains, and to what extent these effects can be compensated by different parenting practices. The findings highlight the need for

policies aiming to improve early child development to address a range of inter-linked problems. It is not one risk factor that matters, but the cumulation of risks. Effective early intervention programmes must address the elimination of a range of critical socio-economic risk factors, such as persistent poverty, low parental education, and poor housing conditions, in addition to promoting psycho-social and developmental resource factors. Such interventions should aim to build resources within the family, enabling children and their parents to function effectively and maintain warm and supportive relationships.

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